Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 3			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	UT	SCI.3.3.2.a	Predict and observe what happens when a force is applied to an object (e.g., wind, flowing water).
Finding the Center of Gravity Using Rulers	UT	SCI.3.4.1.b	Use measurement to demonstrate that heavier objects require more force than lighter ones to overcome gravity.
Finding the Center of Gravity Using Plumb Lines	UT	SCI.3.3.2.a	Predict and observe what happens when a force is applied to an object (e.g., wind, flowing water).
Finding the Center of Gravity Using Plumb Lines	UT	SCI.3.4.1.b	Use measurement to demonstrate that heavier objects require more force than lighter ones to overcome gravity.
Finding the Center of Gravity Using Plumb Lines	UT	SCI.3.5.2.c	Predict, measure, and graph the temperature changes produced by a variety of mechanical machines and electrical devices while they are operating.
Changing the Center of Gravity Using Moment Arms	UT	SCI.3.3.2.a	Predict and observe what happens when a force is applied to an object (e.g., wind, flowing water).
Changing the Center of Gravity Using Moment Arms	UT	SCI.3.3.2.d	Conduct a simple investigation to show what happens when objects of various weights collide with one another (e.g., marbles, balls).
Changing the Center of Gravity Using Moment Arms	UT	SCI.3.4.1.b	Use measurement to demonstrate that heavier objects require more force than lighter ones to overcome gravity.
Changing the Center of Gravity Using Moment Arms	UT	SCI.3.4.2.c	Pose questions about gravity and forces.
Changing the Center of Gravity Using Moment Arms	UT	SCI.3.5.2.c	Predict, measure, and graph the temperature changes produced by a variety of mechanical machines and electrical devices while they are operating.
Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 4			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	UT	SCI.4.2.1.b	Observe, measure, and record data on the basic elements of weather over a period of time (i.e., precipitation, air temperature, wind speed and direction, and air pressure).

Changing the Center of Gravity Using Moment Arms	UT	SCI.4.2.1.b	Observe, measure, and record data on the basic elements of weather over a period of time (i.e., precipitation, air temperature, wind speed and direction, and air pressure).
Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 5			
Activity/Lesson	**State**	**Standards**	
Vectoring	UT	SCI.5.3.1.d	Research and report the use of magnets that is supported by sound scientific principles.
Fuel Efficiency	UT	SCI.5.3.1.d	Research and report the use of magnets that is supported by sound scientific principles.
Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 6			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	UT	SCI.6.3.2.b	Describe the role of computers in understanding the solar system (e.g., collecting and interpreting data from observations, predicting motion of objects, operating space probes).
Vectoring	UT	SCI.6.1.1.d	Design an investigation, construct a chart, and collect data depicting the phases of the moon.
Vectoring	UT	SCI.6.3.2.b	Describe the role of computers in understanding the solar system (e.g., collecting and interpreting data from observations, predicting motion of objects, operating space probes).
Vectoring	UT	SCI.6.6.1.d	Observe and describe, with the use of models, heat energy being transferred through a fluid medium (liquid and/or gas) by convection currents.
Vectoring	UT	SCI.6.6.1.e	Design and conduct an investigation on the movement of heat energy.
Fuel Efficiency	UT	SCI.6.3.1.c	Use models and graphs that accurately depict scale to compare the size and distance between objects in the solar system.
Fuel Efficiency	UT	SCI.6.5.2.d	Display results in an appropriate format (e.g., graphs, tables, diagrams).

Fuel Efficiency	UT	SCI.6.6.1.d	Observe and describe, with the use of models, heat energy being transferred through a fluid medium (liquid and/or gas) by convection currents.
Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 7			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	UT	SCI.7.1.1.d	Describe the limitations of using models to represent atoms (e.g., distance between particles in atoms cannot be represented to scale in models, the motion of electrons cannot be described in most models).
Jet Propulsion	UT	SCI.7.2.1.c	Observe and describe the sorting of earth materials in a mixture based on density and particle size (e.g., sorting grains of sand of the same size with different densities, sort materials of different particle size with equal densities).
Jet Propulsion	UT	SCI.7.5.1.c	Defend the importance of observation in scientific classification.
Vectoring	UT	SCI.7.1.2.e	Design a procedure to measure mass and volume of gases.
Vectoring	UT	SCI.7.5.1.c	Defend the importance of observation in scientific classification.
Center of Gravity, Pitch, Yaw	UT	SCI.7.1.1.d	Describe the limitations of using models to represent atoms (e.g., distance between particles in atoms cannot be represented to scale in models, the motion of electrons cannot be described in most models).
Center of Gravity, Pitch, Yaw	UT	SCI.7.1.2.e	Design a procedure to measure mass and volume of gases.
Center of Gravity, Pitch, Yaw	UT	SCI.7.3.1.d	Model the cell processes of diffusion and osmosis and relate this motion to the motion of particles.
Fuel Efficiency	UT	SCI.7.1.2.e	Design a procedure to measure mass and volume of gases.
Exploring the Extreme			
2002 Science			
Core Curriculum			
Utah Science			
Grade 8			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	UT	SCI.8.1.2.a	Identify observable evidence of a physical change (e.g., change in shape, size, phase).

Jet Propulsion	UT	SCI.8.1.2.b	Identify observable evidence of a chemical change (e.g., color change, heat or light given off, change in odor, gas given off).
Jet Propulsion	UT	SCI.8.1.2.c	Observe and describe chemical reactions involving atmospheric oxygen (e.g., rust, fire, respiration, photosynthesis).
Jet Propulsion	UT	SCI.8.3.2.c	Use a model to demonstrate how erosion changes the surface of Earth.
Jet Propulsion	UT	SCI.8.4.3.e	Investigate the principles used to engineer changes in forces and motion.
Vectoring	UT	SCI.8.1.1.c	Investigate and report on the chemical and physical properties of a particular substance.
Vectoring	UT	SCI.8.1.2.a	Identify observable evidence of a physical change (e.g., change in shape, size, phase).
Vectoring	UT	SCI.8.1.2.b	Identify observable evidence of a chemical change (e.g., color change, heat or light given off, change in odor, gas given off).
Vectoring	UT	SCI.8.4.2.d	Design and build structures to support a load.
Vectoring	UT	SCI.8.4.2.e	Engineer (design and build) a machine that uses gravity to accomplish a task.
Vectoring	UT	SCI.8.4.3.b	Engineer a device that uses levers or inclined planes to create a mechanical advantage.
Vectoring	UT	SCI.8.4.3.c	Engineer a device that uses friction to control the motion of an object.
Vectoring	UT	SCI.8.4.3.d	Design and build a complex machine capable of doing a specified task.
Vectoring	UT	SCI.8.4.3.e	Investigate the principles used to engineer changes in forces and motion.
Center of Gravity, Pitch, Yaw	UT	SCI.8.3.2.c	Use a model to demonstrate how erosion changes the surface of Earth.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.2.d	Design and build structures to support a load.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.2.e	Engineer (design and build) a machine that uses gravity to accomplish a task.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.3.b	Engineer a device that uses levers or inclined planes to create a mechanical advantage.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.3.c	Engineer a device that uses friction to control the motion of an object.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.3.d	Design and build a complex machine capable of doing a specified task.
Center of Gravity, Pitch, Yaw	UT	SCI.8.4.3.e	Investigate the principles used to engineer changes in forces and motion.
Fuel Efficiency	UT	SCI.8.1.2.a	Identify observable evidence of a physical change (e.g., change in shape, size, phase).

Fuel Efficiency	UT	SCI.8.1.2.b	Identify observable evidence of a chemical change (e.g., color change, heat or light given off, change in odor, gas given off).
Fuel Efficiency	UT	SCI.8.1.3.c	Measure and graph the relationship between the states of water and changes in its temperature.
Fuel Efficiency	UT	SCI.8.3.2.c	Use a model to demonstrate how erosion changes the surface of Earth.
Fuel Efficiency	UT	SCI.8.4.2.d	Design and build structures to support a load.
Fuel Efficiency	UT	SCI.8.4.2.e	Engineer (design and build) a machine that uses gravity to accomplish a task.
Fuel Efficiency	UT	SCI.8.4.3.c	Engineer a device that uses friction to control the motion of an object.
Fuel Efficiency	UT	SCI.8.4.3.d	Design and build a complex machine capable of doing a specified task.
Fuel Efficiency	UT	SCI.8.4.3.e	Investigate the principles used to engineer changes in forces and motion.